

APPROVED	FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG. 1
PRIOR ART

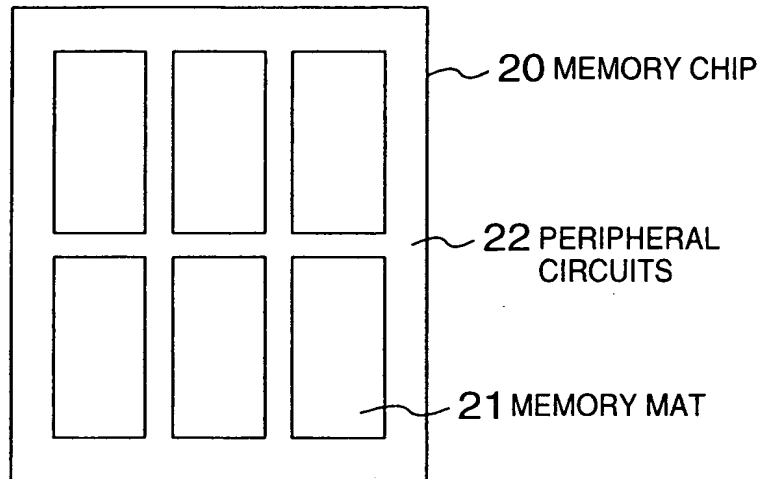
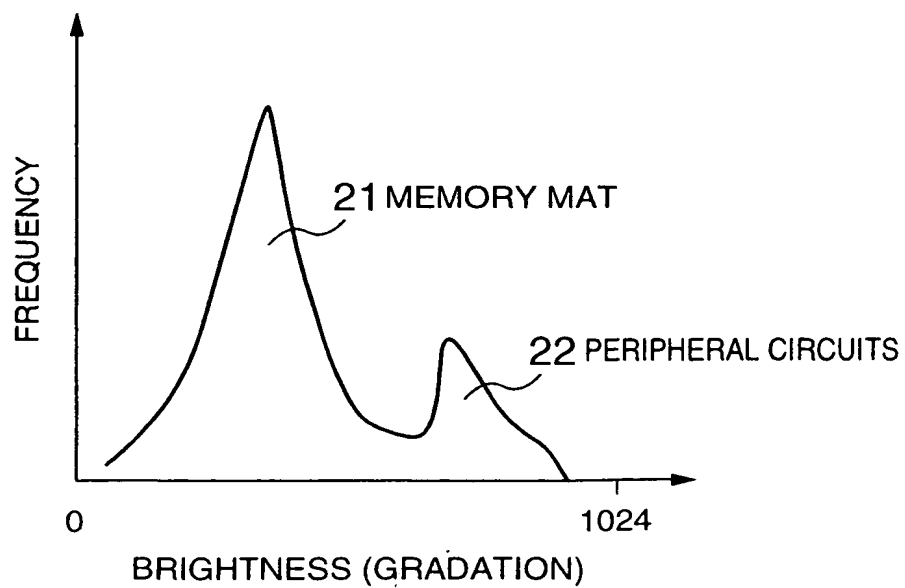


FIG. 2
PRIOR ART



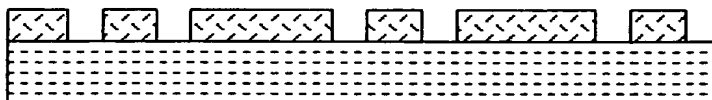
APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG. 3
PRIOR ART

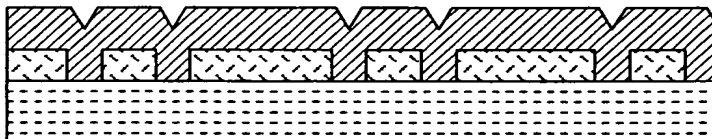
INSULATING LAYER
DEPOSITION



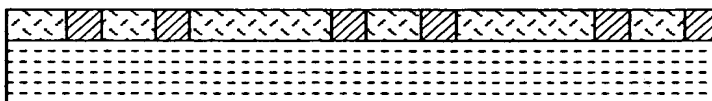
INSULATING LAYER
PATTERNING



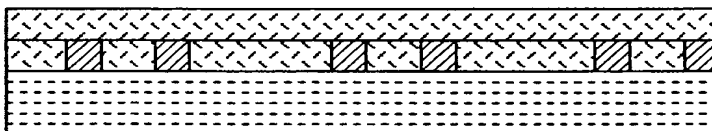
INSULATING LAYER
DEPOSITION



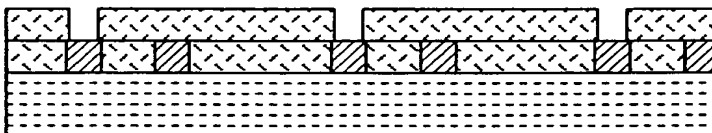
CMP



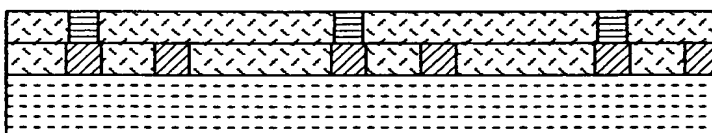
INSULATING LAYER
DEPOSITION



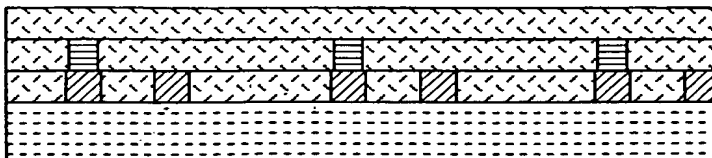
THROUGH-HOLES
FORMING



THROUGH-HOLES
CHARGING

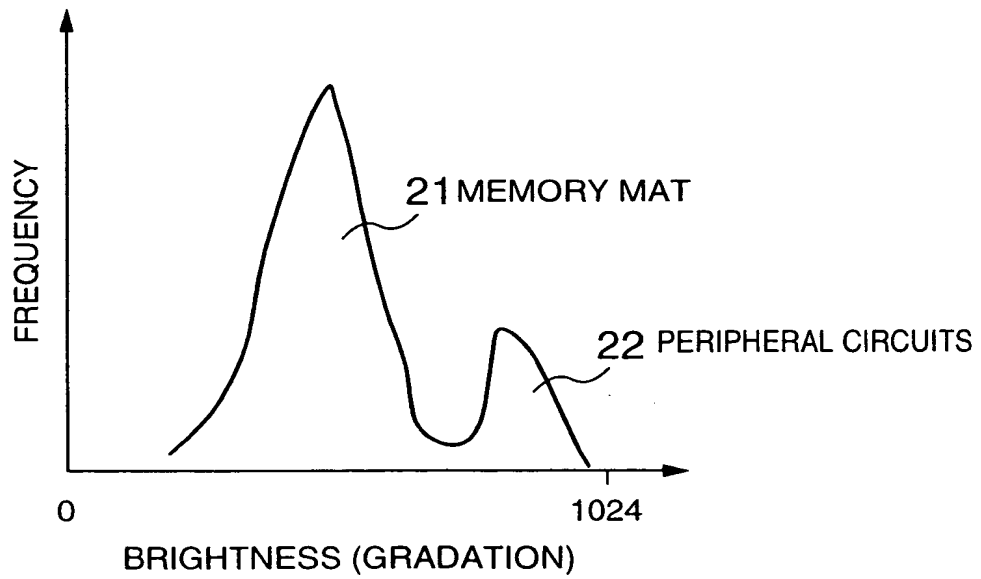


INSULATING LAYER
DEPOSITION



APPROVED	O.G. FIG.	
BY	C. 205	SUBCLASS
DRAFTSMAN		

FIG. 4
PRIOR ART



APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG. 5
PRIOR ART

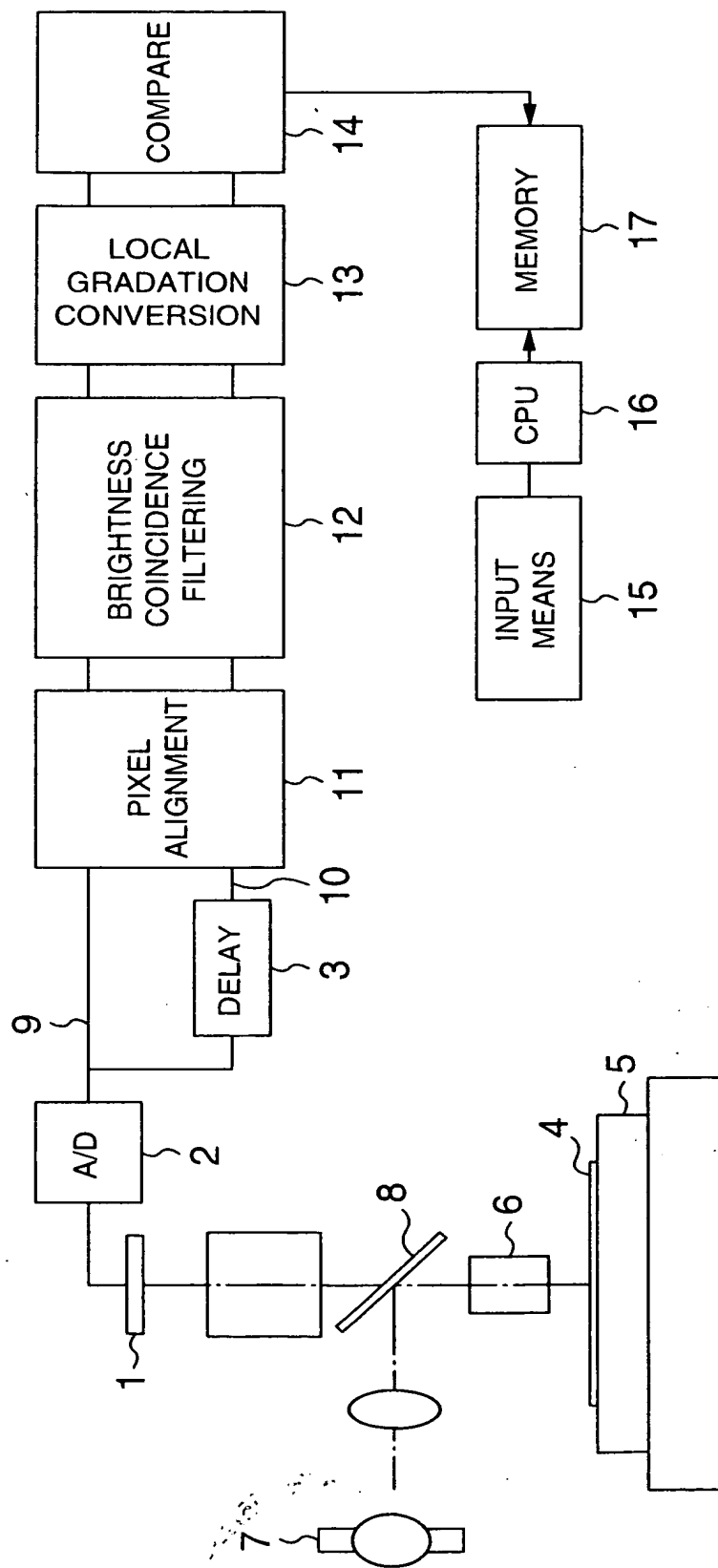
	-1	0	1
-1	8.28×10^{11}	1.56×10^{11}	9.07×10^{11}
0	8.55×10^{11}	0	8.59×10^{11}
1	9.0×10^{11}	1.55×10^{11}	8.33×10^{11}

FIG. 6
PRIOR ART

	-1	0	1
-1	967323	742941	951727
0	953922	732608	939418
1	950797	728523	937704

APPROVED	FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG. 7



APPROVED	O.K. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

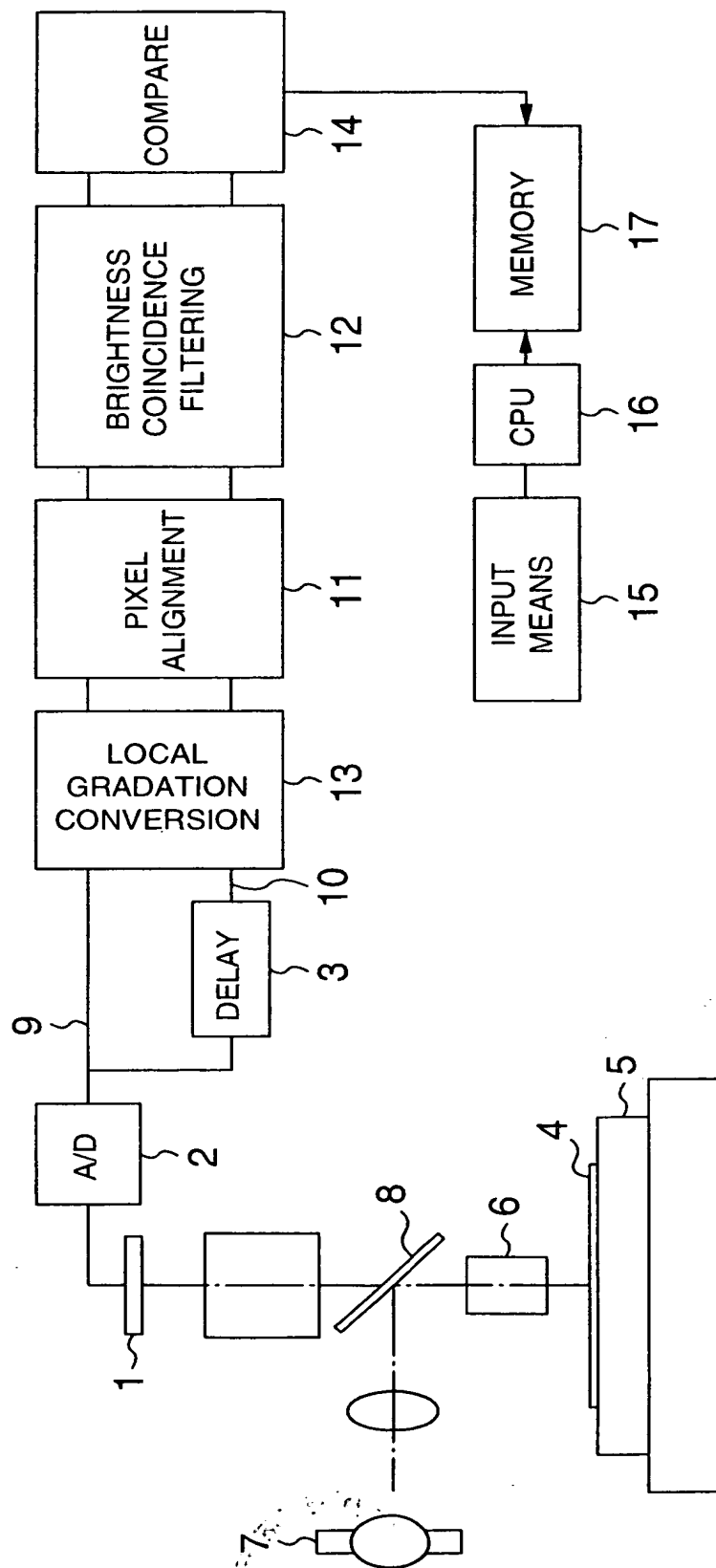


FIG. 8

APPROVED	G. G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG. 9

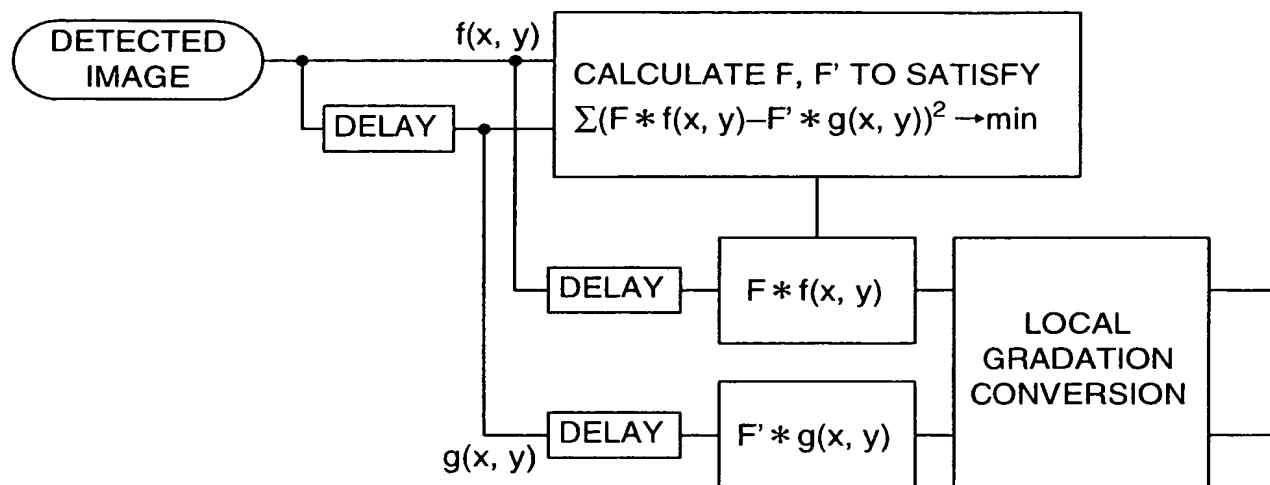


FIG. 10

$$F = \begin{bmatrix} 1 - \alpha - \beta & \alpha \\ \beta & 0 \end{bmatrix}$$

$$F' = \begin{bmatrix} 0 & \beta \\ \alpha & 1 - \alpha - \beta \end{bmatrix}$$

FIG. 11

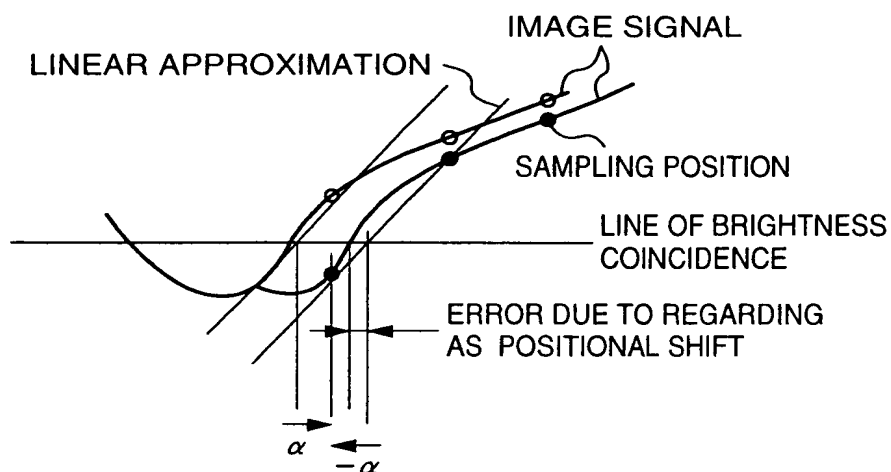
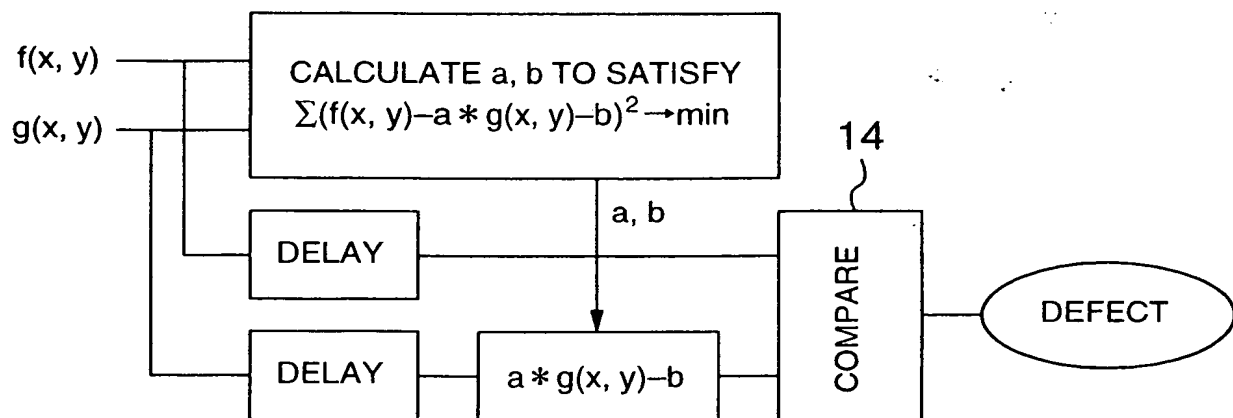


FIG. 12



APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

$f(x, y)$

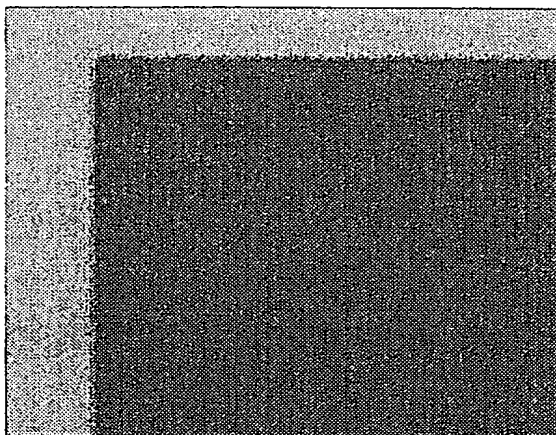


FIG. 13A

$g(x, y)$

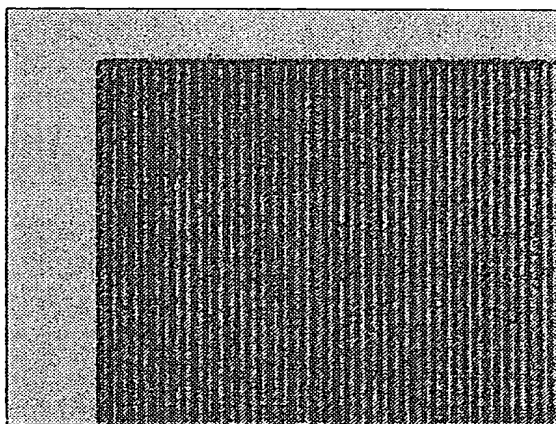


FIG. 13B

$|f(x, y) - g(x, y)|$

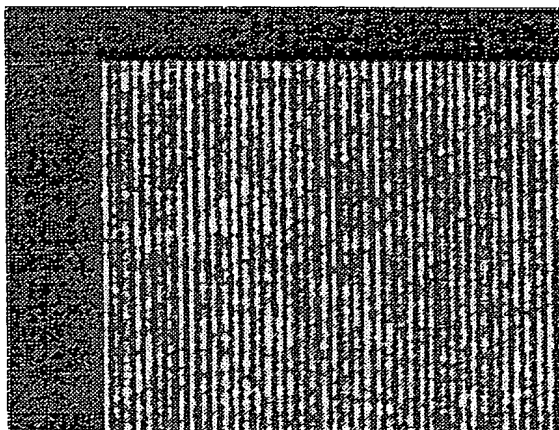
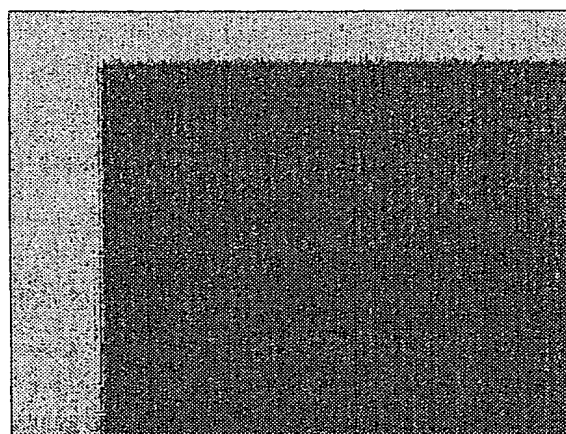


FIG. 13C

DIFFERENCE IMAGE

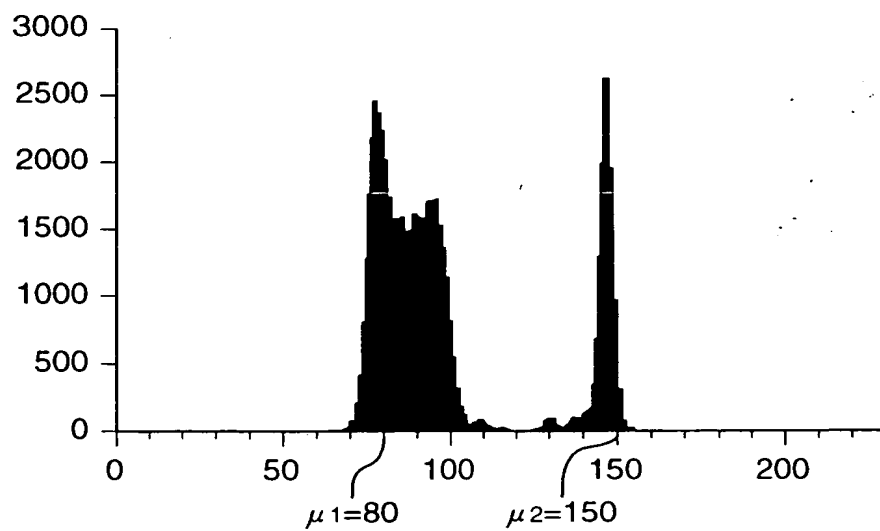
APPROVED	G. G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG. 14A



$g(x, y)$

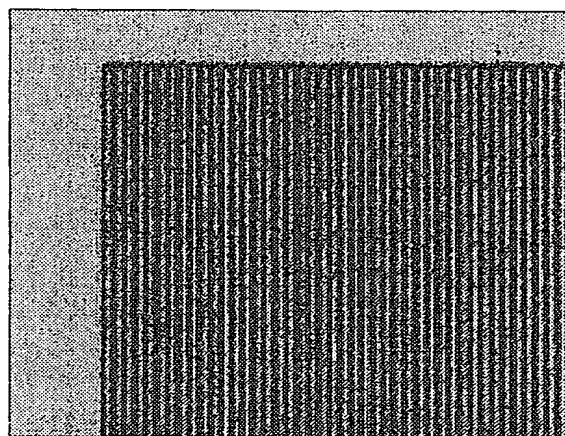
FIG. 14B



BRIGHTNESS HISTOGRAM OF $g(x, y)$

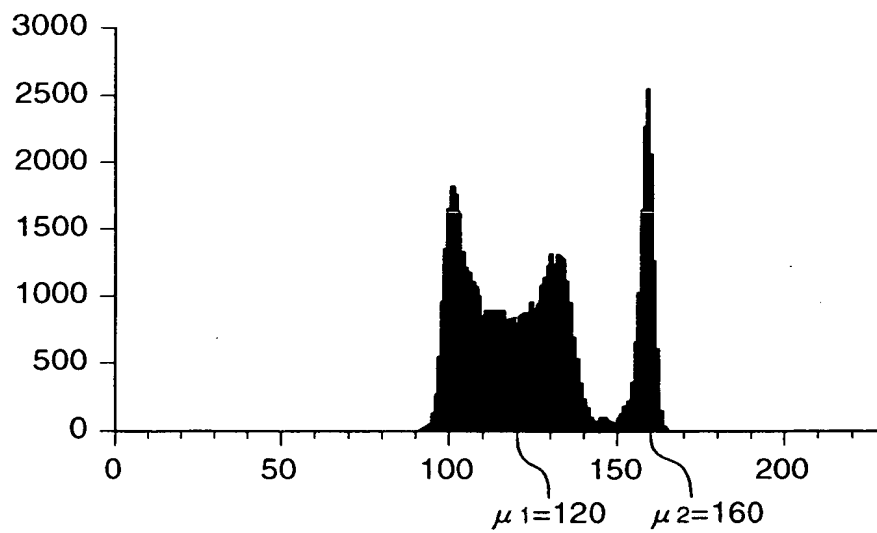
APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG. 15A



$f(x, y)$

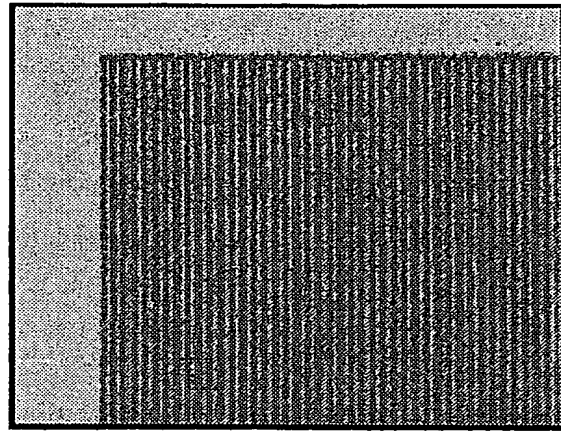
FIG. 15B



BRIGHTNESS HISTOGRAM OF $f(x, y)$

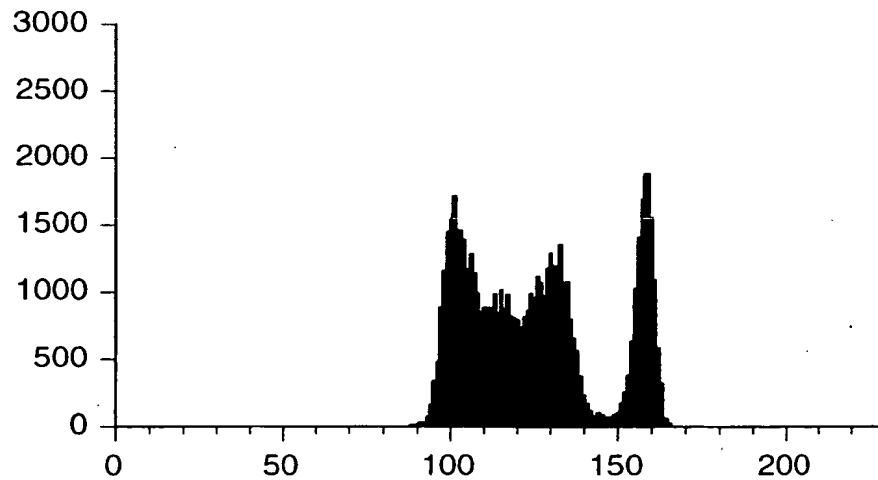
APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG. 16A



$$a * g(x, y) + b$$

FIG. 16B

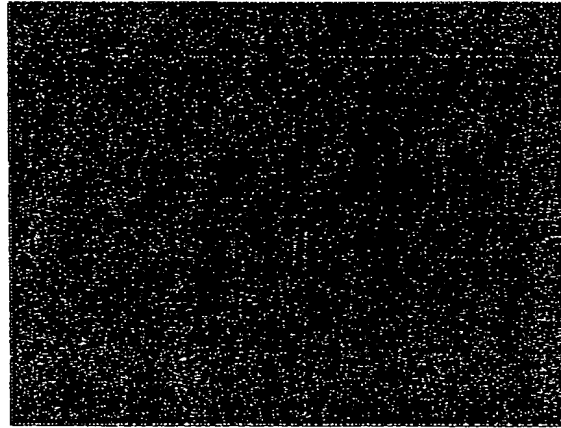


BRIGHTNESS HISTOGRAM OF $\{a * g(x, y) + b\}$

* a,b ARE ESTIMATED WITHIN LOCAL REGION OF IMAGE AT EACH POINT

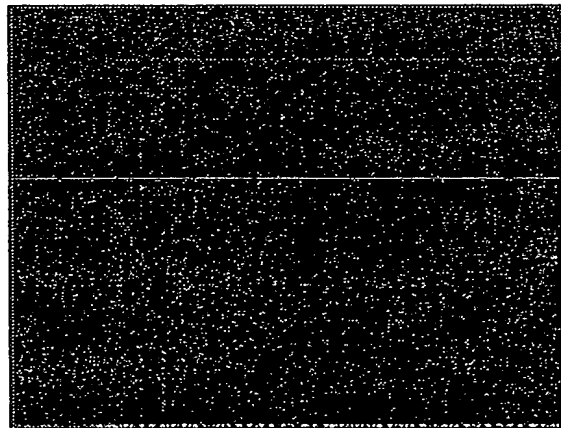
APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG. 17A



DIFFERENCE IMAGE 1 (3X3)

FIG. 17B

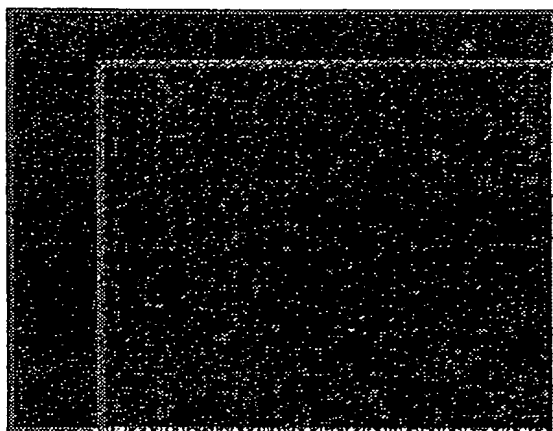


DIFFERENCE IMAGE 2 (5X5)



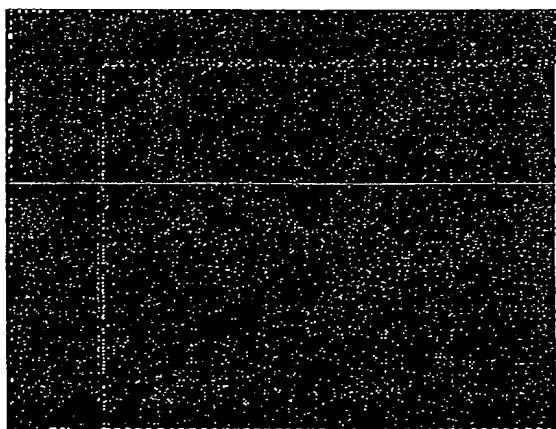
APPROVED	O.C. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG. 18A



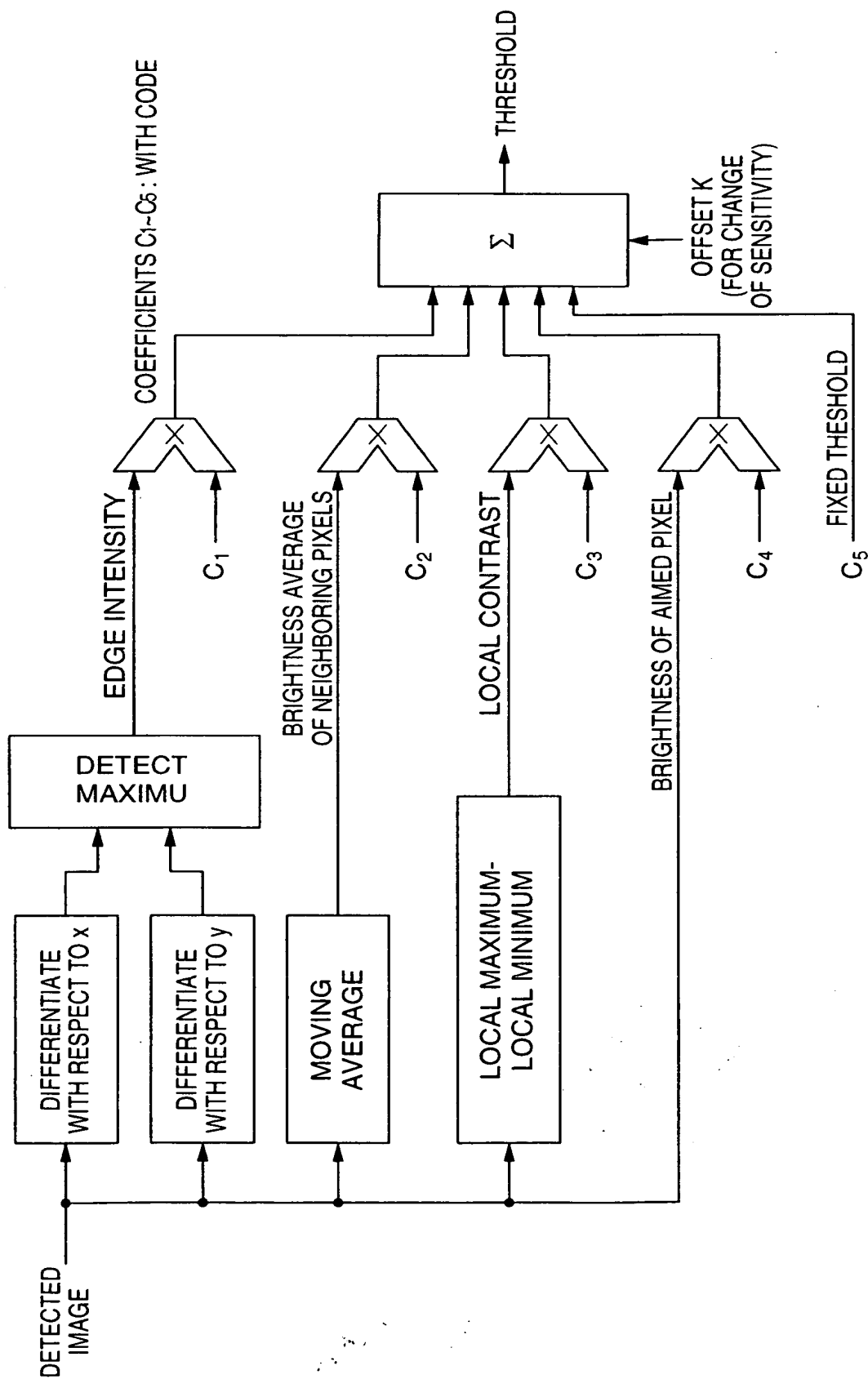
DIFFERENCE IMAGE 3 (7X7)

FIG. 18B



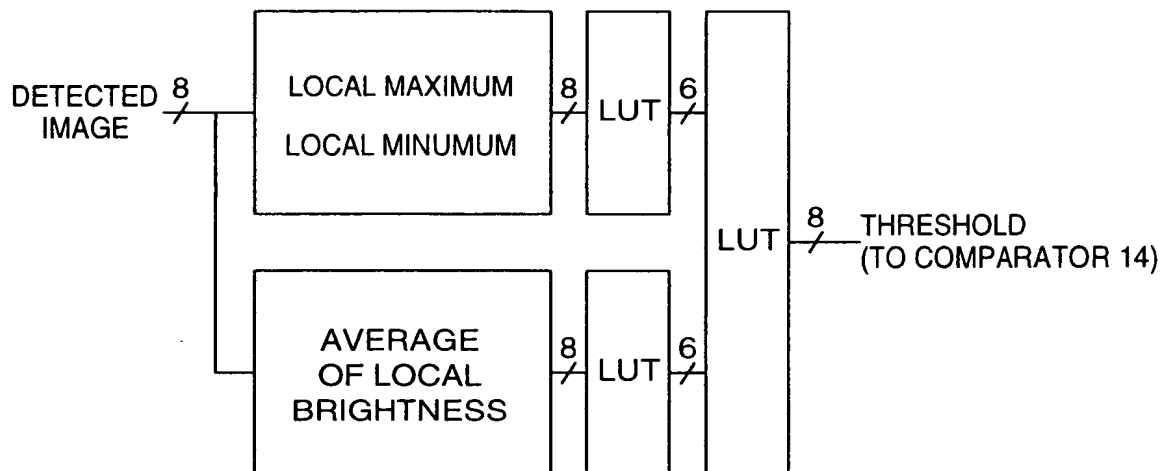
DIFFERENCE IMAGE 4 (7X7, WEIGHTED)

FIG. 19



APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG. 20



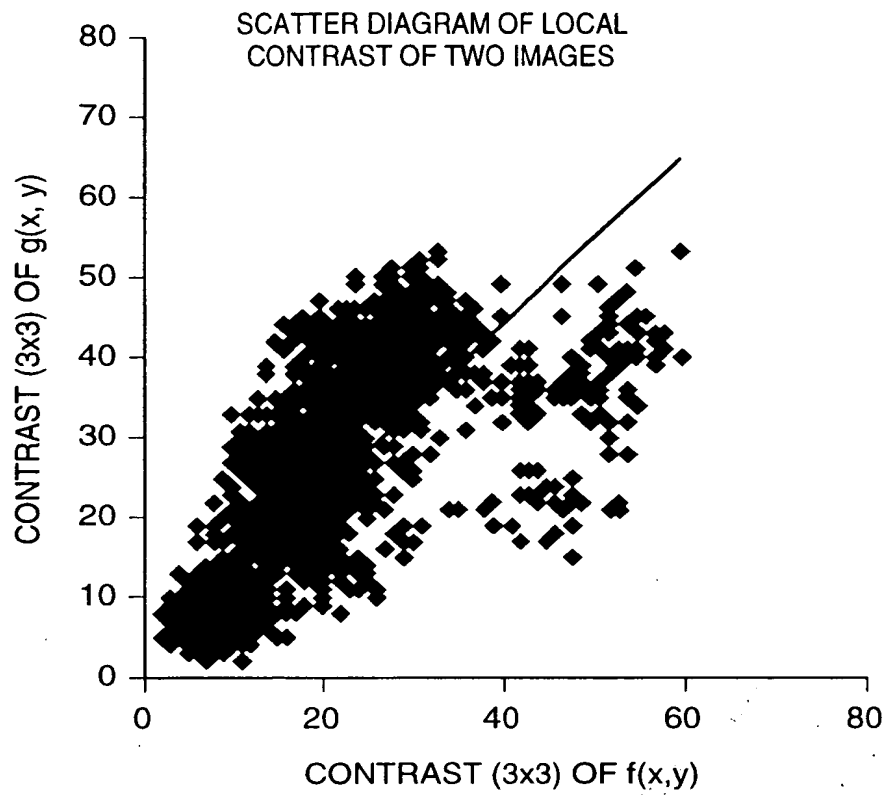
APPROVED	C. O. FIG.	
BY	CLARK	SUBCLASS
DRAFTSMAN		

FIG. 21

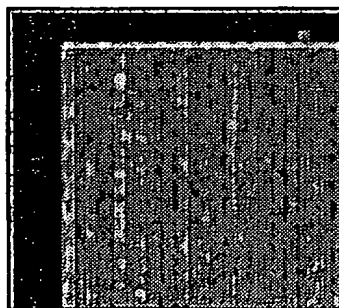
1) AFTER ALIGNMENT WITH
ACCURACY OF PIXEL UNIT

GRADIENT	INTERCEPT
1.038	2.336

$V_r = 125.774$
 $V_e = 59.653$



VALUE OF V_e



APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

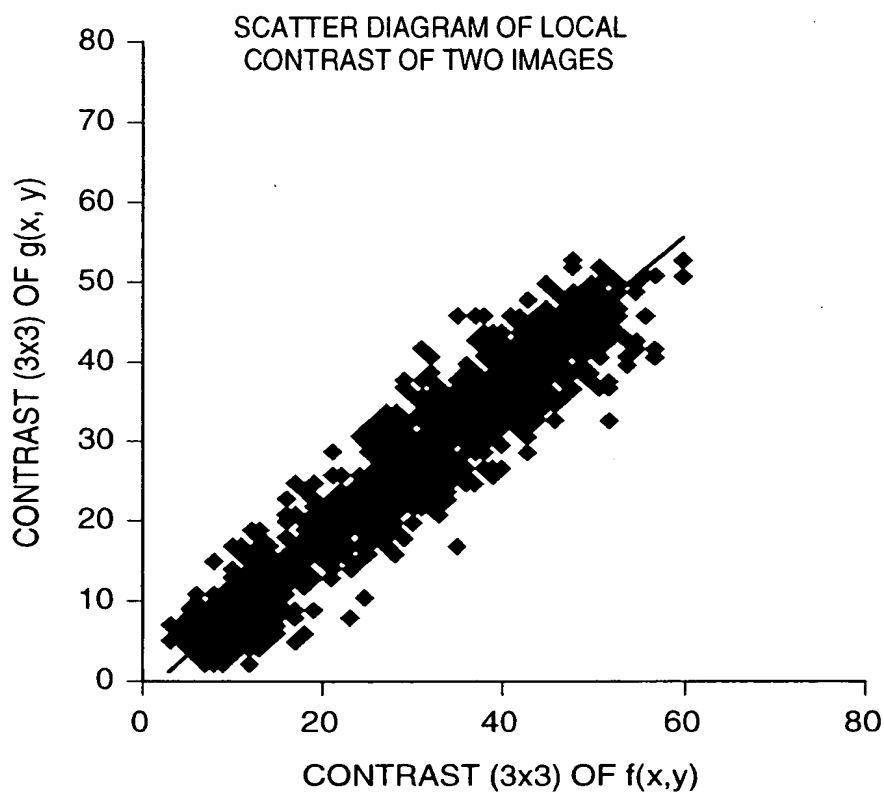
FIG. 22

2) AFTER MATCHING OF BRIGHTNESS

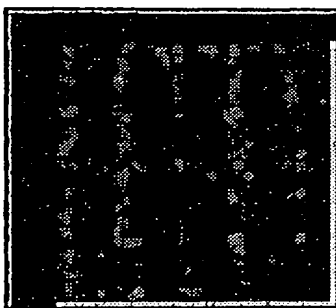
GRADIENT	INTERCEPT
0.958	-1.649

$V_r = 175.852$

$V_e = 9.603$



VALUE OF V_e



APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

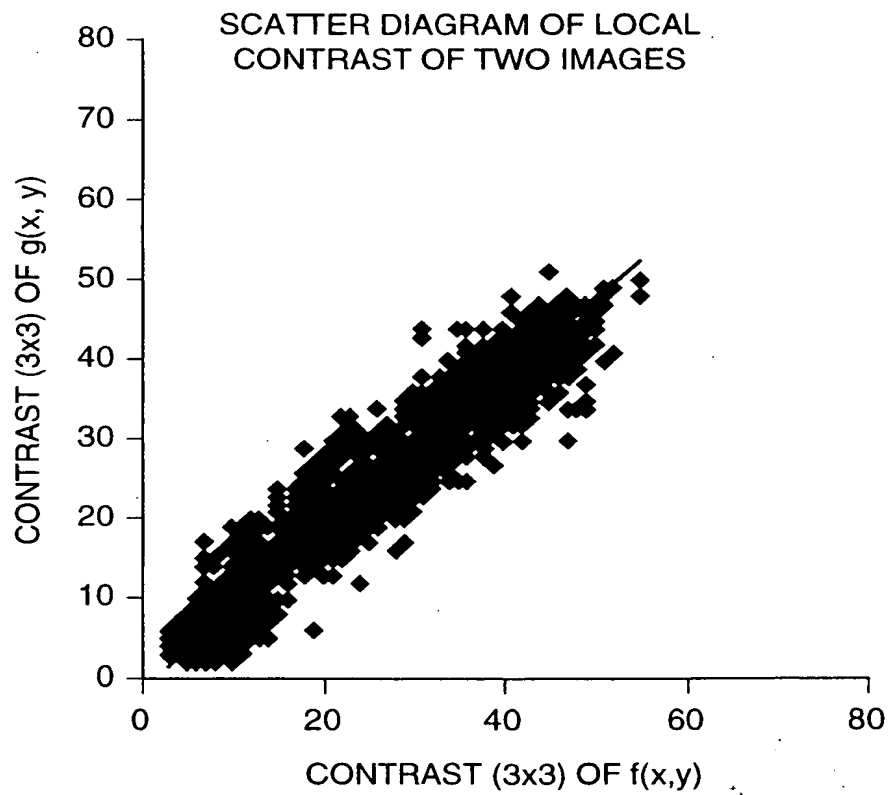
FIG. 23

3) AFTER ALIGNMENT OF SUB-PIXEL

GRADIENT	INTERCEPT
0.981	-1.454

$V_r = 168.393$

$V_e = 8.869$



VALUE OF V_e

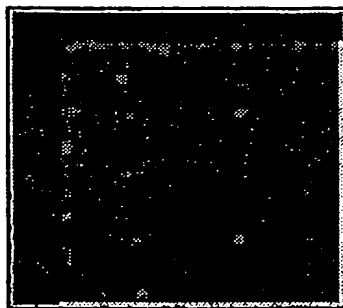


FIG. 24

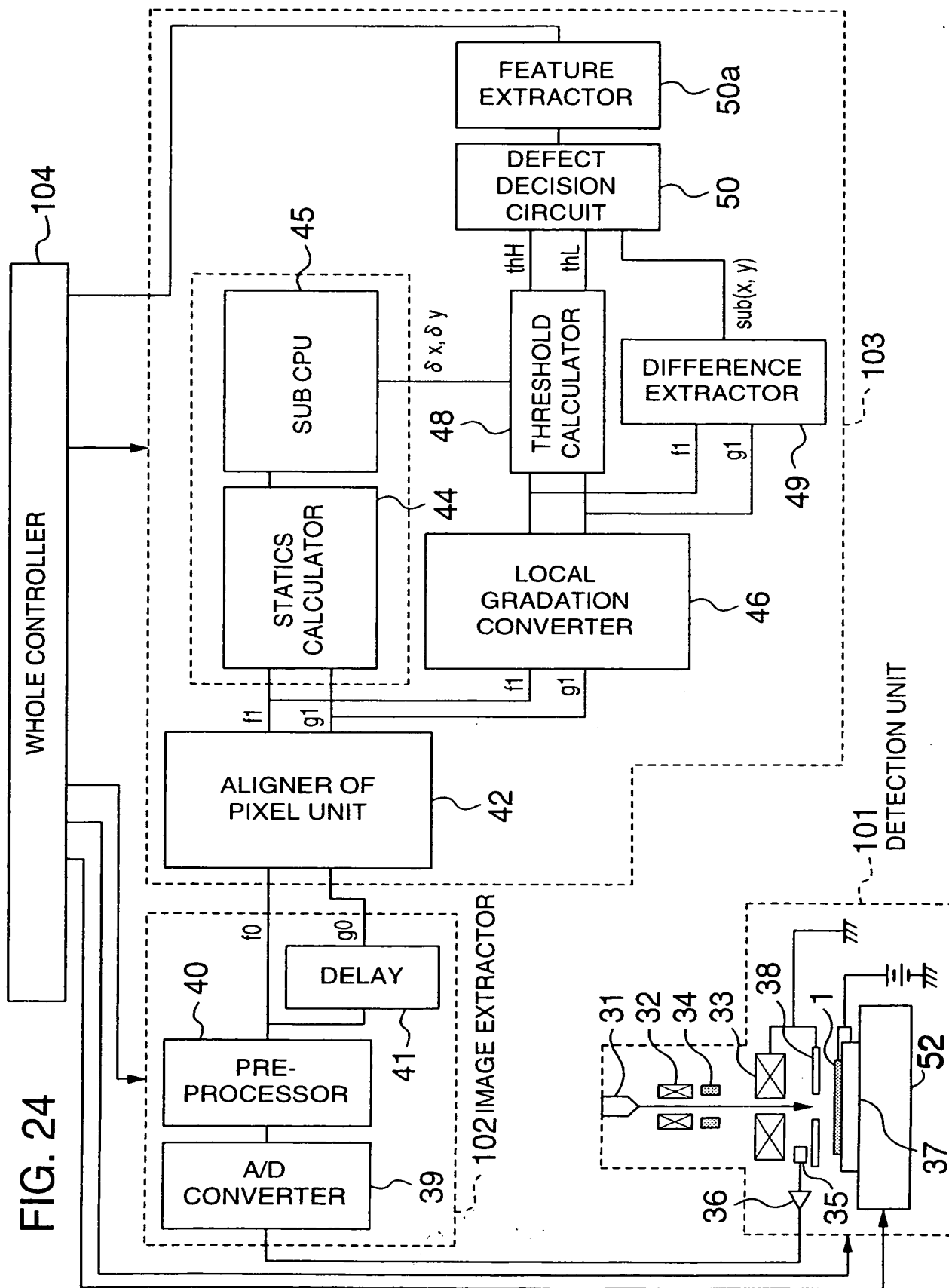


FIG. 25

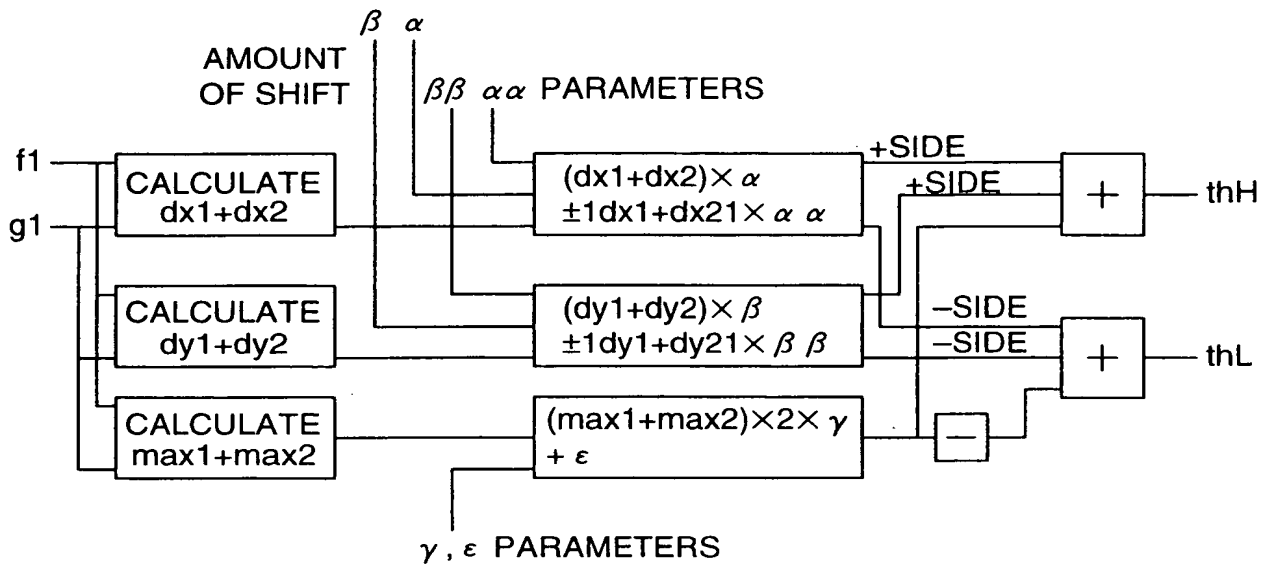
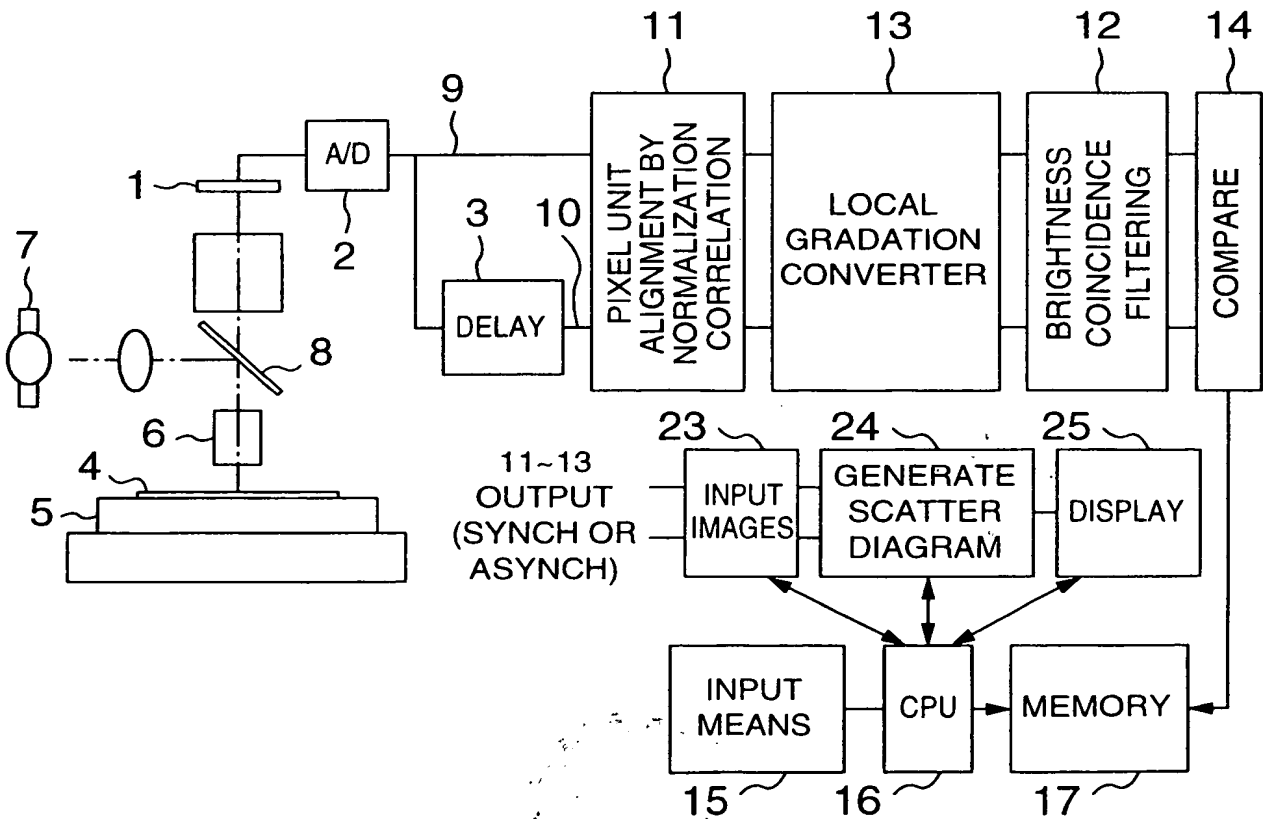


FIG. 26



APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG. 27

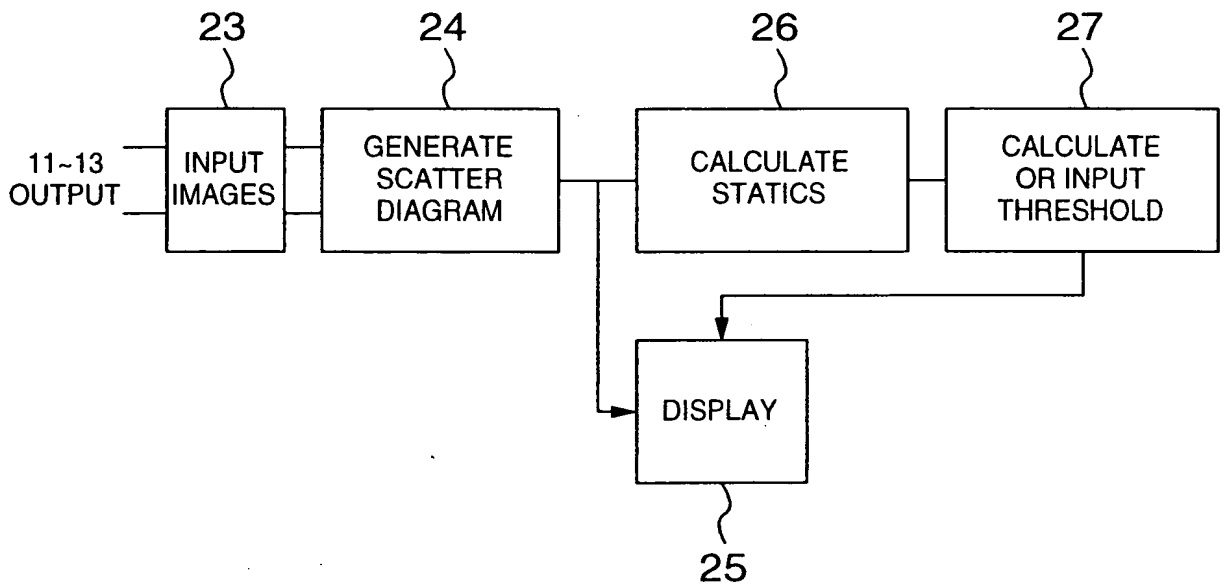
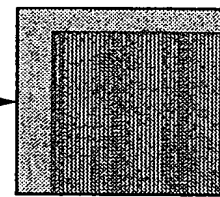
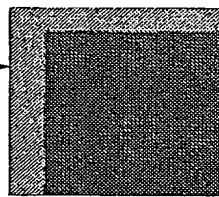
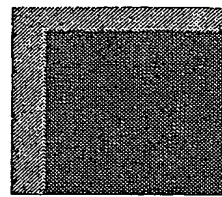
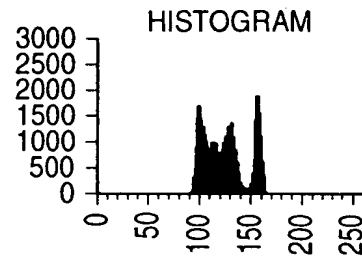
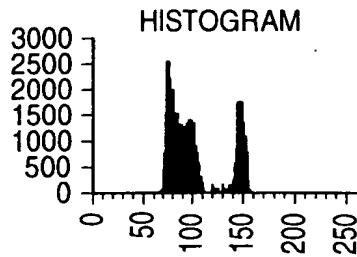


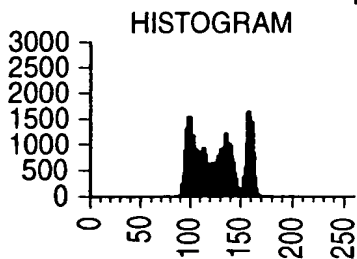
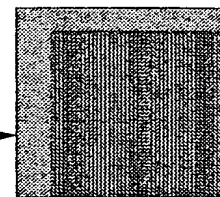
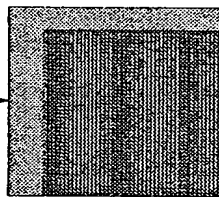
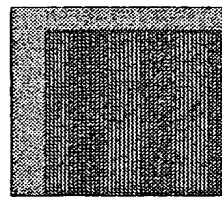
FIG. 28



MATCHING OF
PIXEL UNIT
(NORMALIZATION
CORRELATION)

CORRECT LOCAL
BRIGHTNESS

FILTERING



PIXEL-UNIT MATCHING

LOCAL BRIGHTNESS
CORRECTION

AMOUNT OF STATICS OF IMAGES

AMOUNT OF
DETECTED SHIFT (1:1)

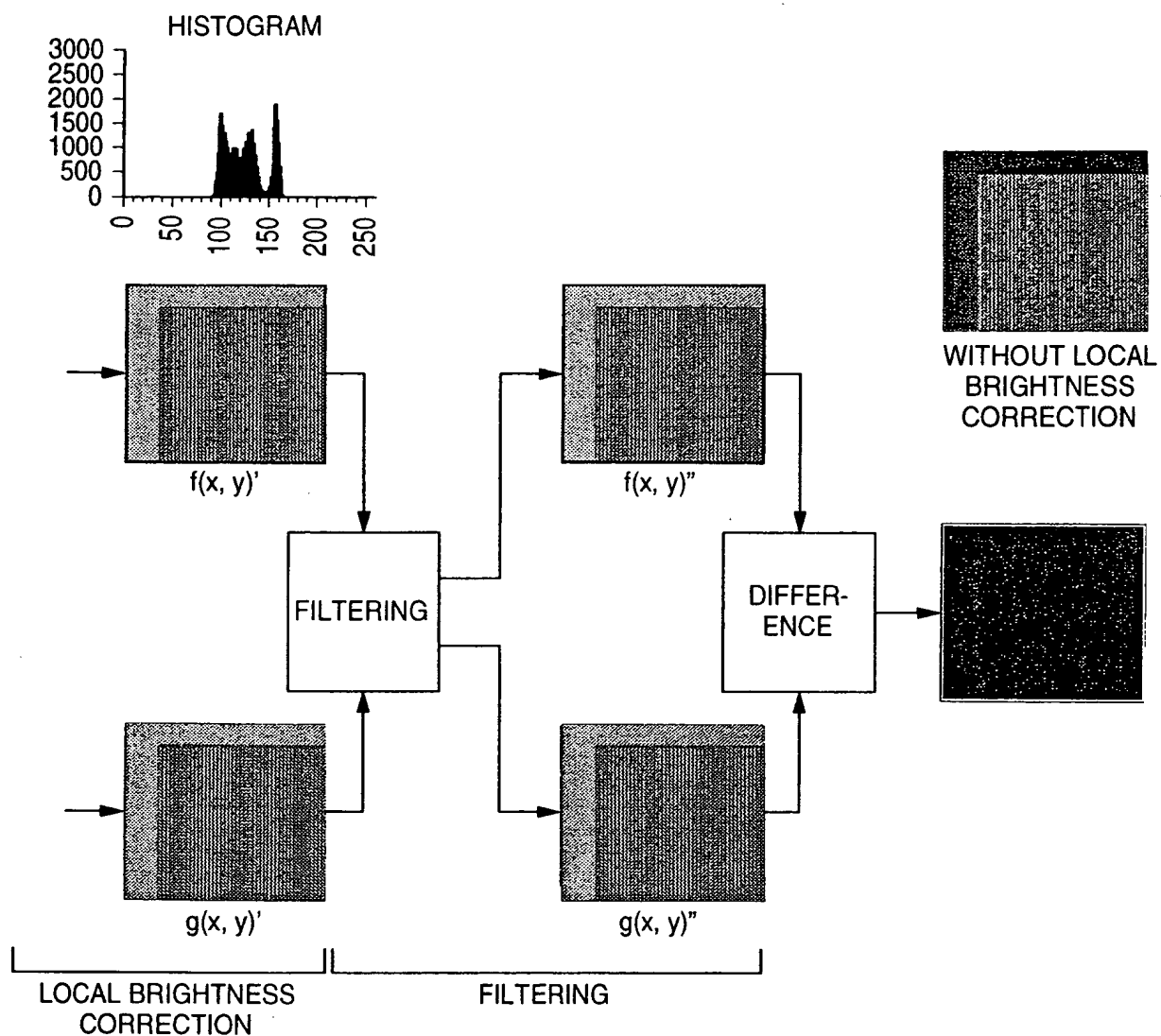
max	66
min	0
μ	25.9
σ	10.92
CONTRAST	45
CONTRAST/max	0.682
MUTUAL CORRELATION VALUE	0.917

GAIN=1.319
OFFSET=0.0039

max	29
min	0
μ	1.94
σ	2.35
CONTRAST	61
CONTRAST/max	2.103
MUTUAL CORRELATION VALUE	0.991

APPROVED	O.C. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG. 29



GAIN=1.319	
OFFSET=0.0039	
max	29
min	0
μ	1.94
σ	2.35
CONTRAST	61
CONTRAST/max	2.103
MUTUAL CORRELATION VALUE	0.991

$\alpha = 0.036(x)$	
$\beta = 0.106(y)$	
max	25
min	0
μ	1.92
σ	1.87
CONTRAST	57
CONTRAST/max	2.280
MUTUAL CORRELATION VALUE	0.993

APPROVED	C. G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG. 30

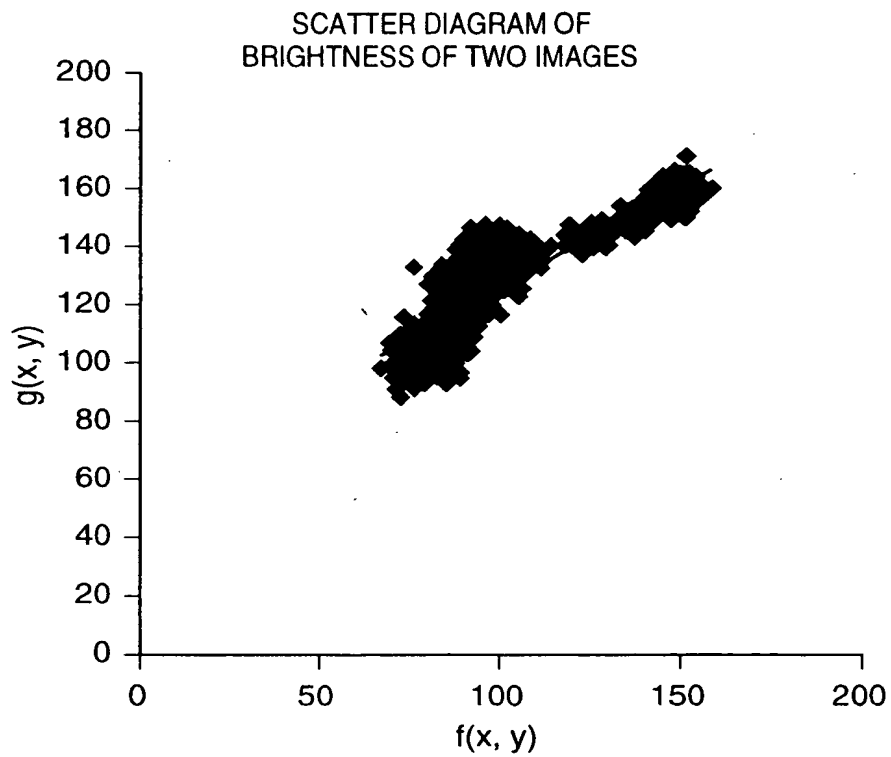
SCATTER OF BRIGHTNESS OF TWO IMAGES
AND AMOUNT OF STATICS V_e

1) AFTER ALIGNMENT OF PIXEL UNIT

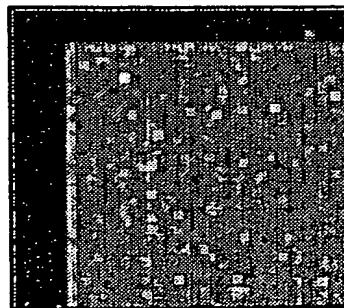
GRADIENT	INTERCEPT
0.705	55.947

$V_r = 447.4806$

$V_e = 40.02821$



VALUE OF V_e



APPROVED	C.C. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

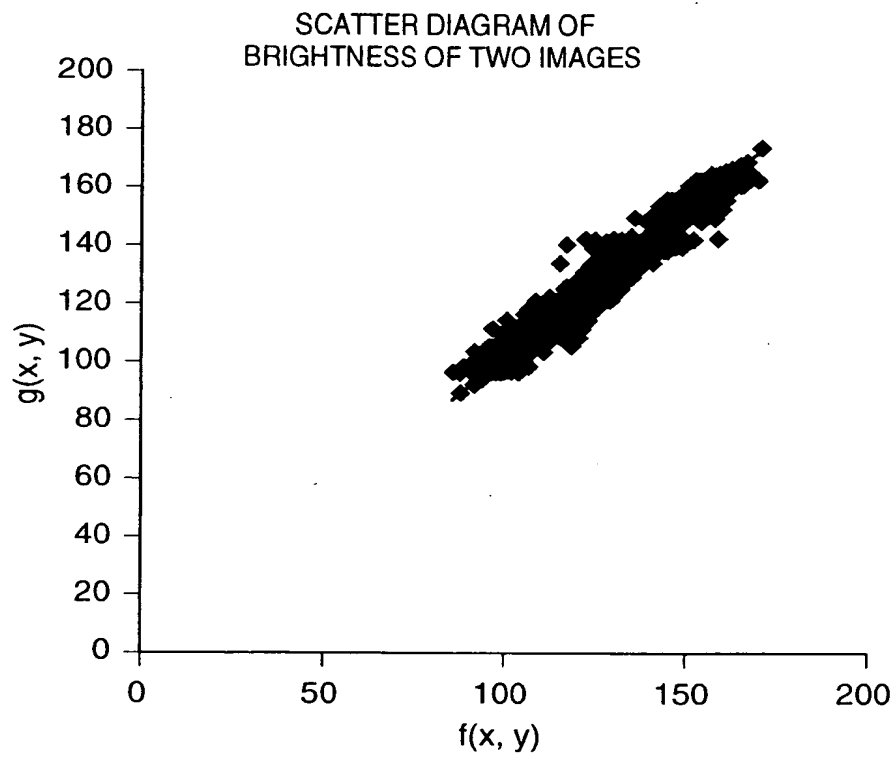
FIG. 31

2) AFTER BRIGHTNESS MATCHING

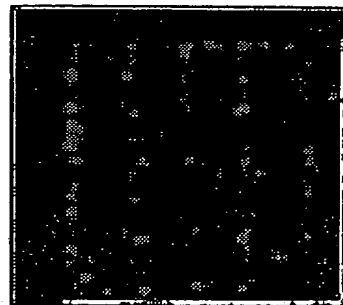
GRADIENT	INTERCEPT
0.986	2.567

$V_r = 478.921$

$V_e = 8.598012$



VALUE OF V_e



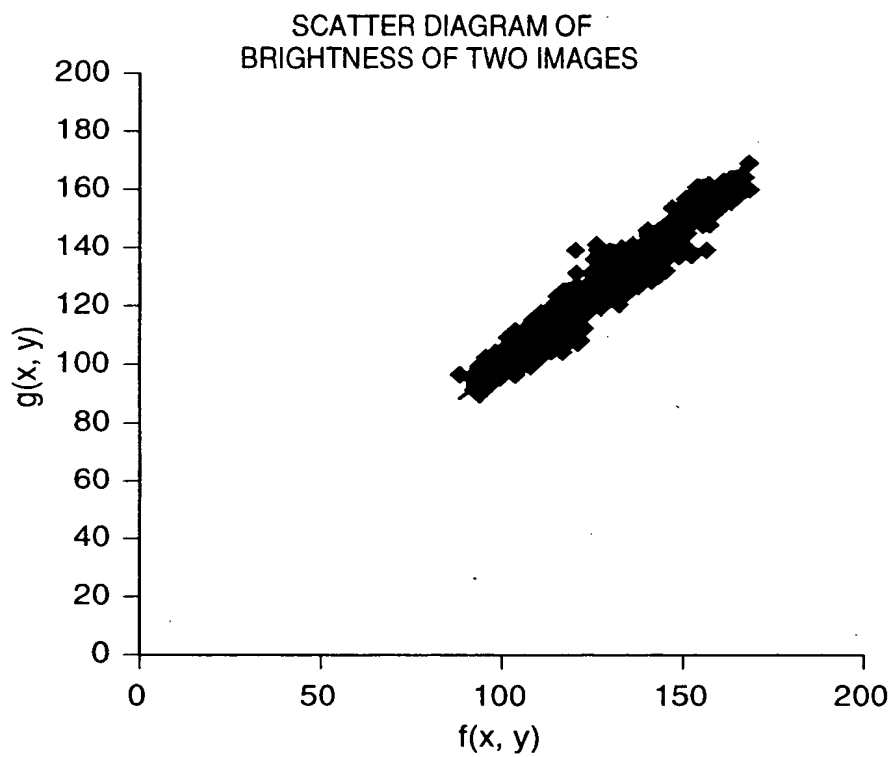
APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG. 32

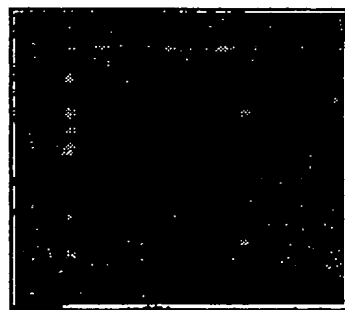
3) AFTER FILTERING

GRADIENT	INTERCEPT
0.991	1.568

$V_r = 473.2729$
 $V_e = 7.477604$

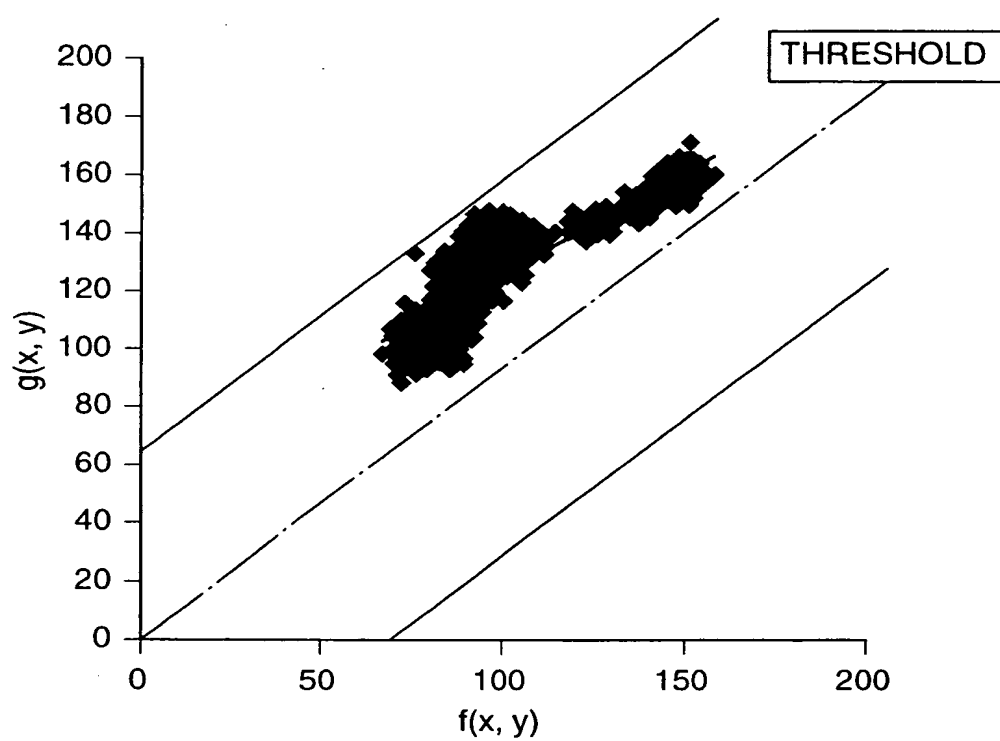


VALUE OF V_e



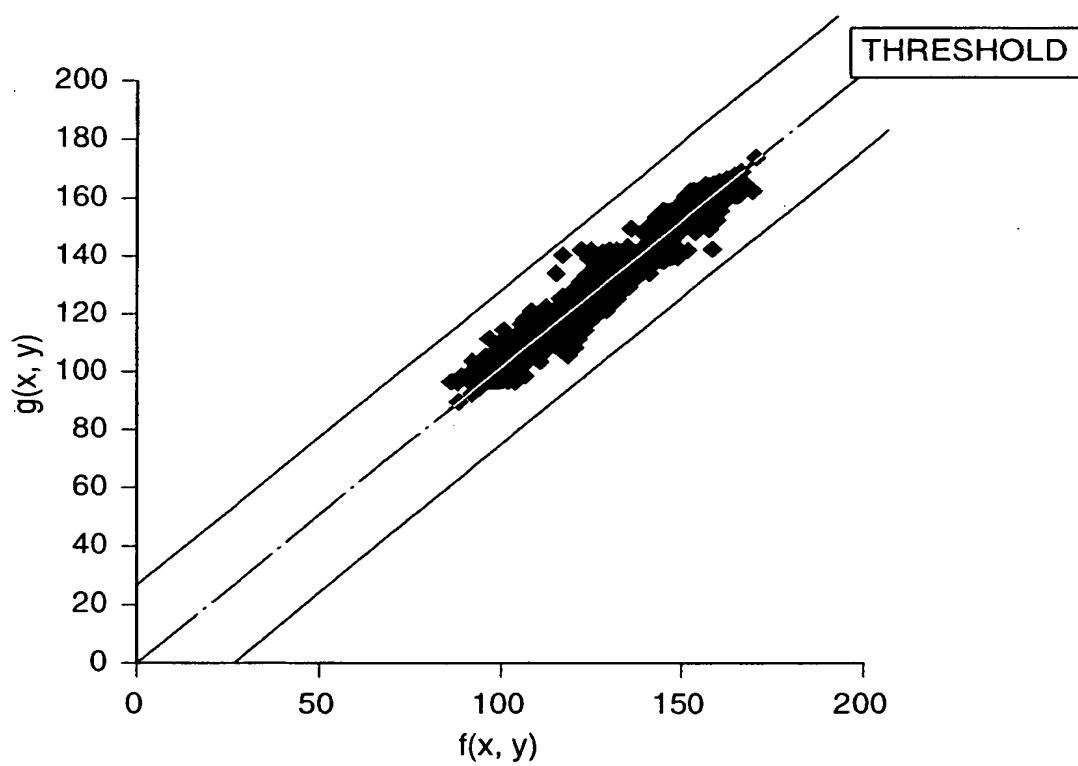
APPROVED	O.C. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG. 33



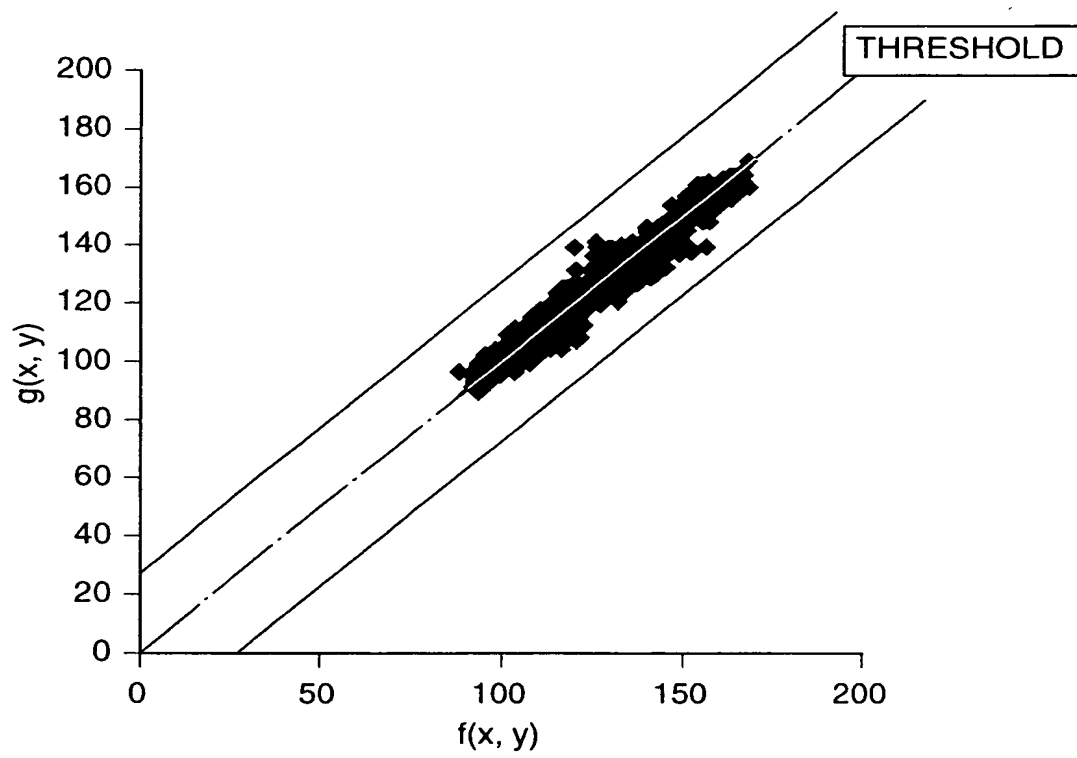
APPROVED	O. G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG. 34



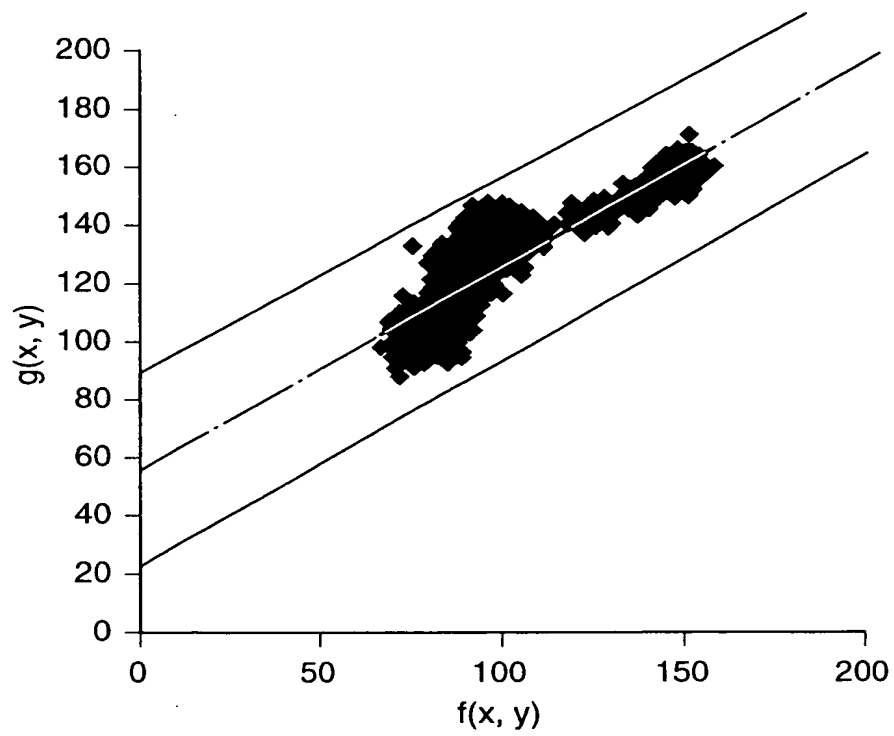
APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG. 35



APPROVED	C.O. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG. 36



APPROVED	C.C. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG. 37

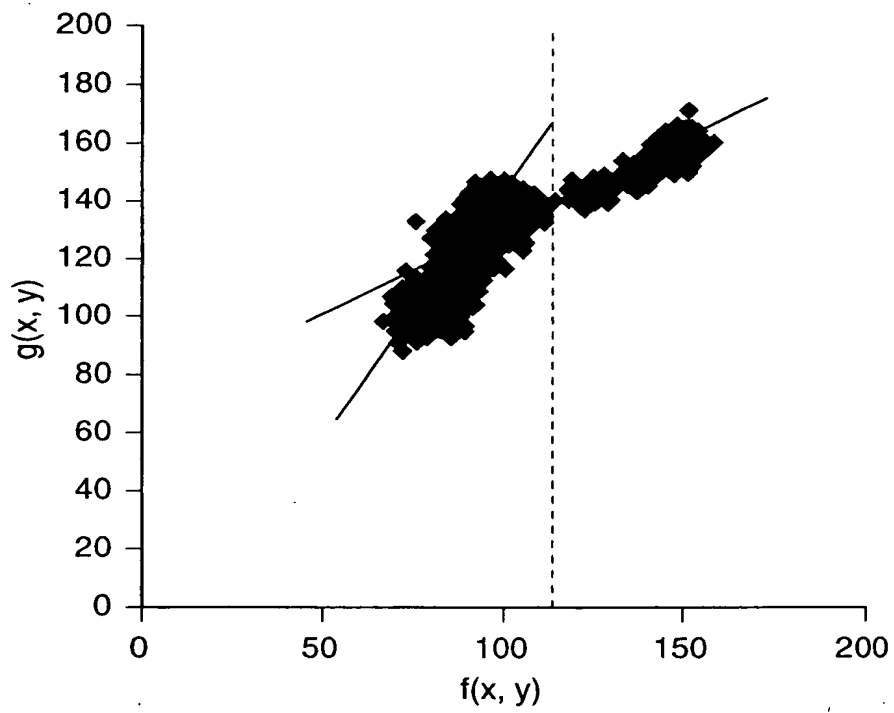


FIG. 38

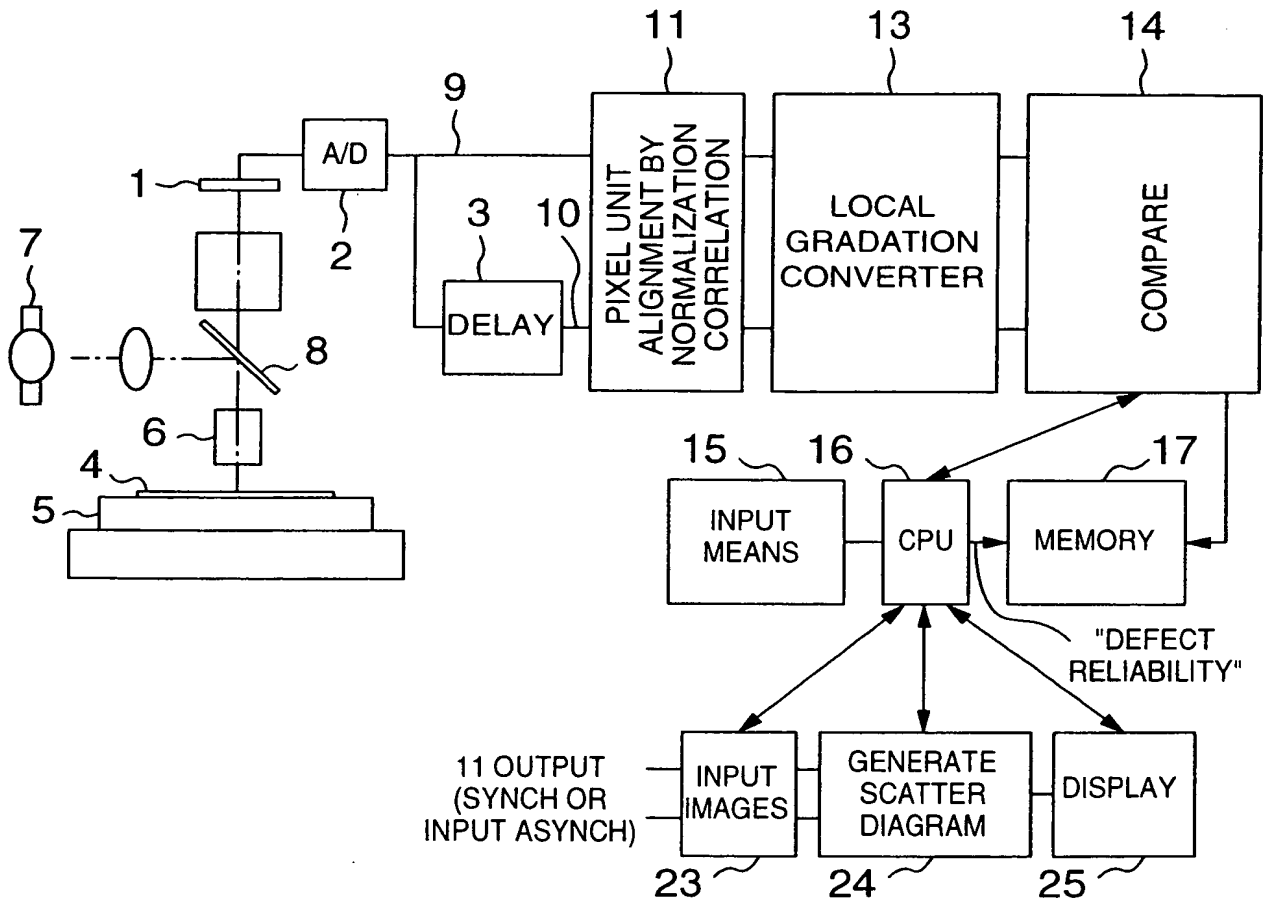


FIG. 41

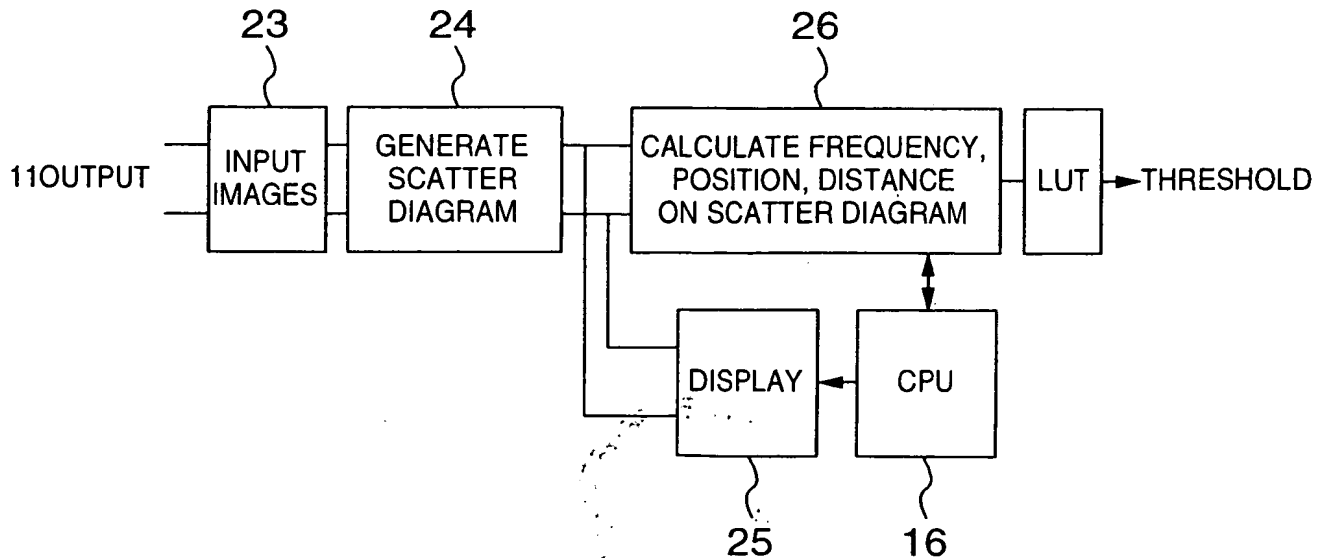


FIG. 39

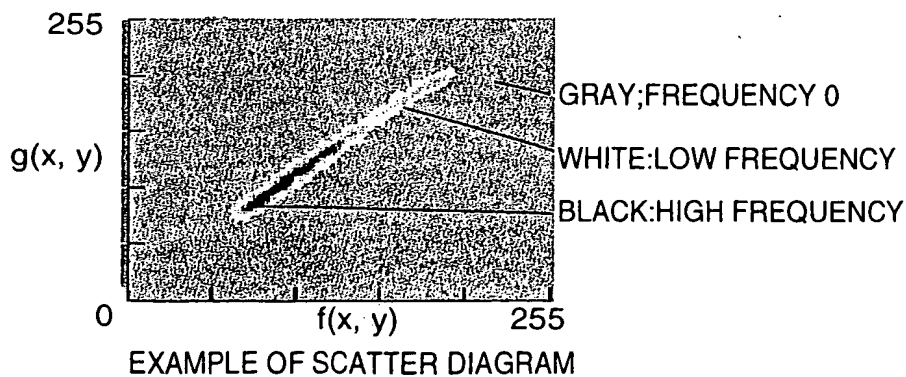
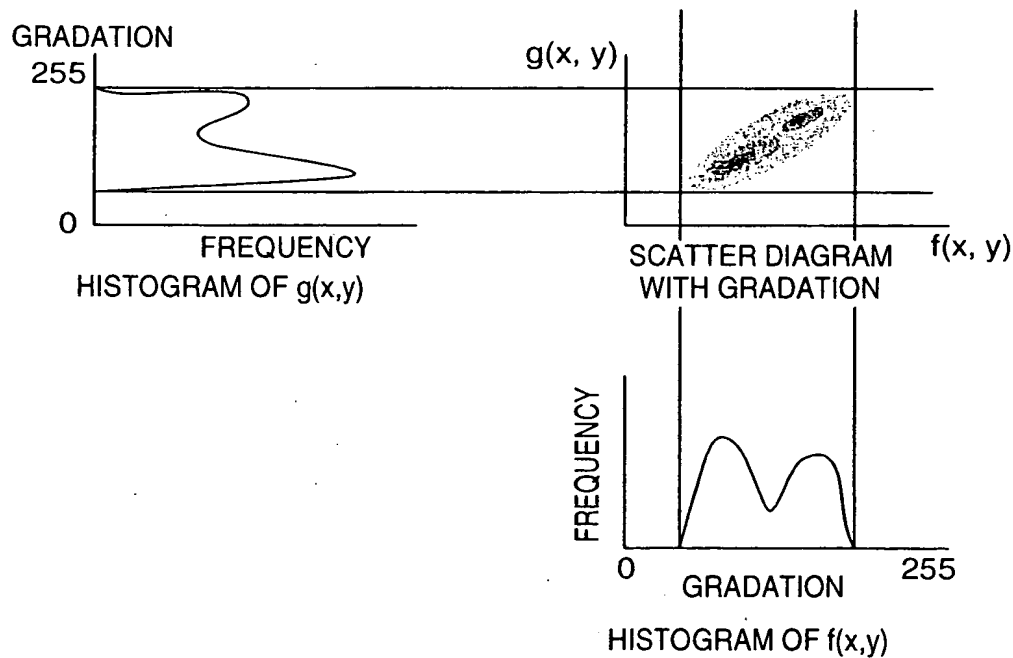
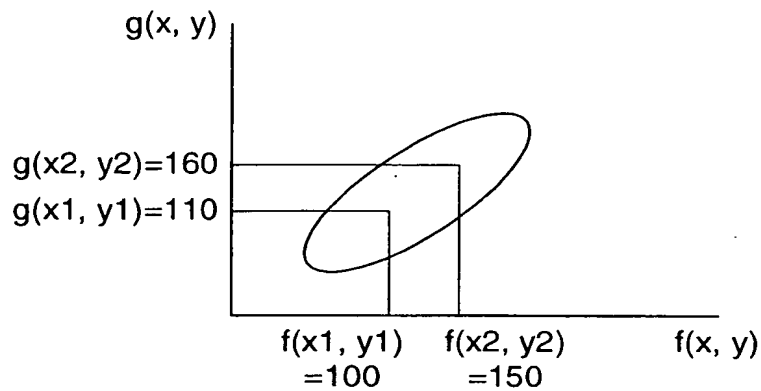
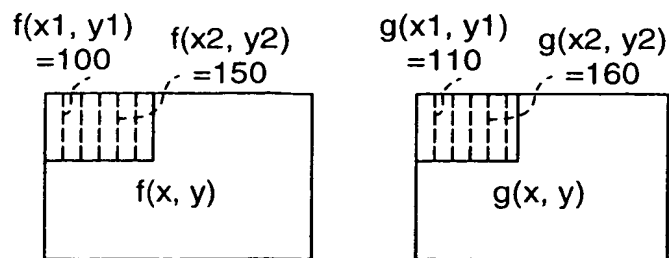
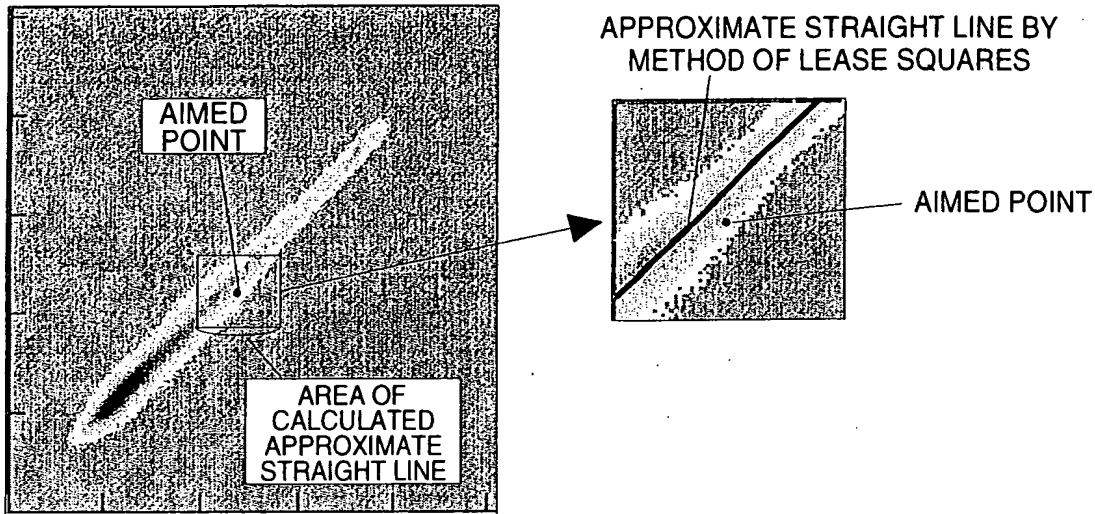
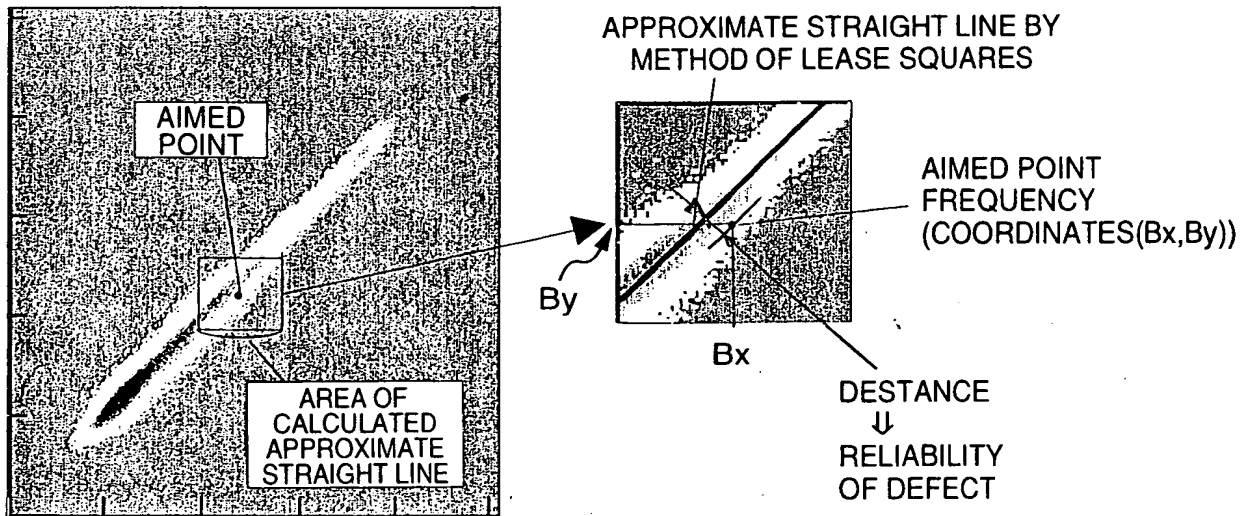


FIG. 40A



- ESTIMATE STRAIGHT LINE IN AREA WITH CENTER OF AIMED POINT ON SCATTER DIAGRAM, AND SELECT THE GAIN AND OFFSET AS CORRECTION COEFFICIENTS
- MAKE AREA SIZE VARIABLE ACCORDING TO FREQUENCY OF SCATTER DIAGRAM

FIG. 40B



- ESTIMATE STRAIGHT LINE IN AREA WITH CENTER OF AIMED POINT ON SCATTER DIAGRAM, AND SELECT THE GAIN AND OFFSET AS CORRECTION COEFFICIENTS
- MAKE AREA SIZE VARIABLE ACCORDING TO FREQUENCY OF SCATTER DIAGRAM

FIG. 42

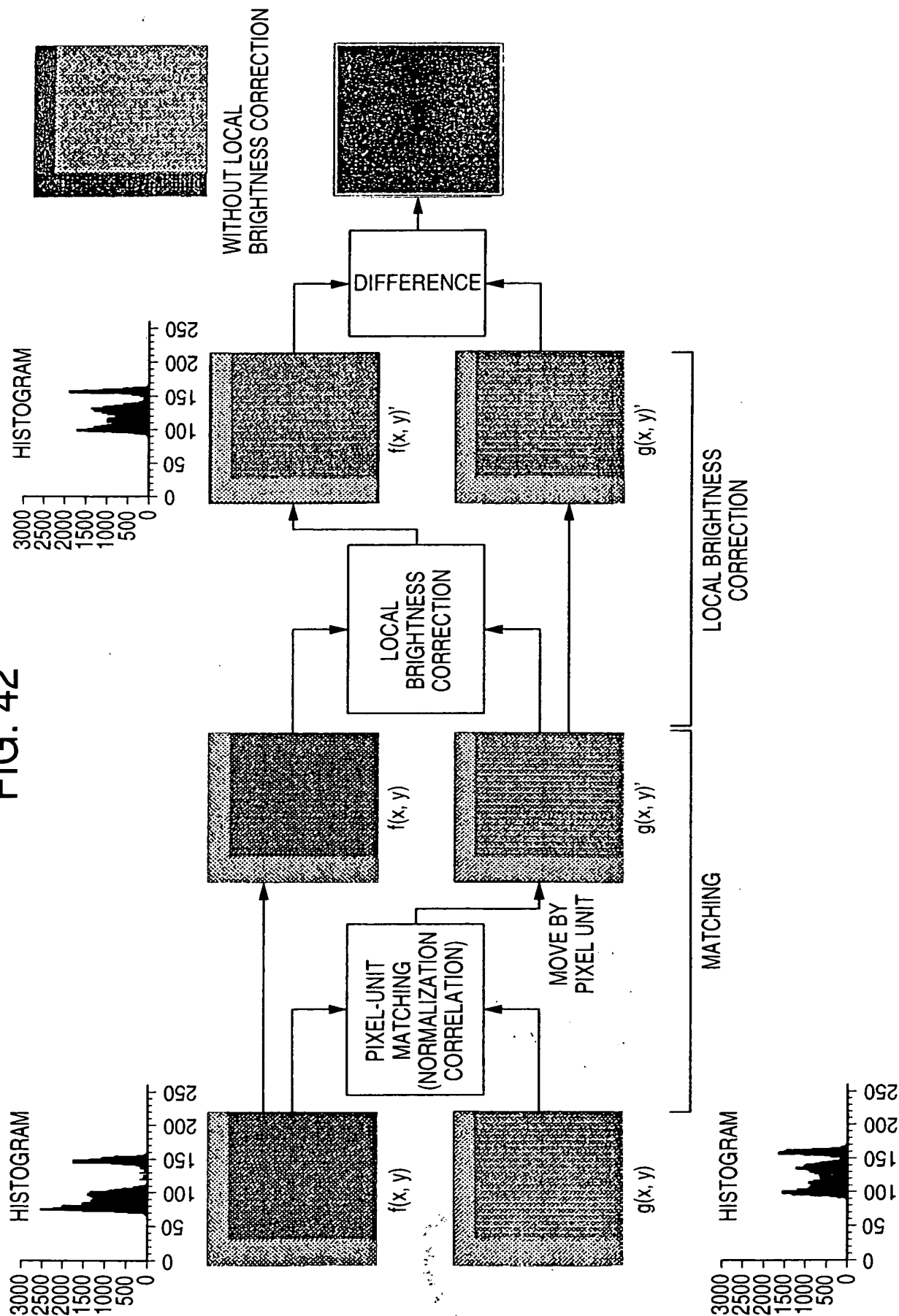


FIG. 43A

1) AFTER ALIGNMENT WITH
ACCURACY OF PIXEL UNIT

GRADIENT	INTERCEPT
0.705	55.947

$V_r = 447.4806$

$V_e = 40.02821$

SCATTER DIAGRAM OF
BRIGHTNESS OF TWO IMAGES

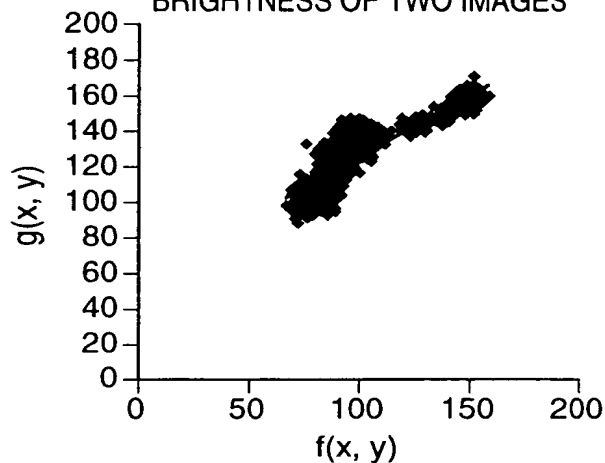


FIG. 43B

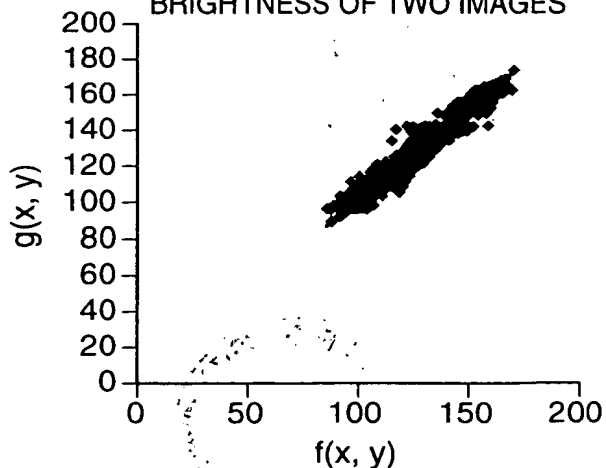
2) AFTER BRIGHTNESS MATCHING

GRADIENT	INTERCEPT
0.986	2.567

$V_r = 478.921$

$V_e = 8.598012$

SCATTER DIAGRAM OF
BRIGHTNESS OF TWO IMAGES



APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG. 44A

DEFECT NUMBER	DEFECT COORDINATES	DEFECT AREA	DEFECT LENGTH	DEFECT BRIGHTNESS DIFFERENCE	DEFECT RELIABILITY (FREQUENCY INFORMATION)
1	(100.10, 202.20)	4.54	(2.2, 1.6)	14	100
2	(120.75, 232.72)	10.2	(2.9, 4.2)	20	250
3				

FIG. 44B

DEFECT NUMBER	DEFECT COORDINATES	DEFECT AREA	DEFECT LENGTH	DEFECT BRIGHTNESS DIFFERENCE	DEFECT RELIABILITY (DISTANCE INFORMATION)
1	(100.10, 202.20)	4.54	(2.2, 1.5)	14	25
2	(120.75, 232.72)	10.2	(2.9, 4.2)	20	12
3				

FIG. 44C

DEFECT NUMBER	DEFECT COORDINATES	DEFECT AREA	DEFECT LENGTH	DEFECT BRIGHTNESS DIFFERENCE	DEFECT RELIABILITY (POSITION INFORMATION)
1	(100.10, 202.20)	4.54	(2.2, 1.5)	14	(100, 200)
2	(120.75, 232.72)	10.2	(2.9, 4.2)	20	(250, 200)
3				

APPROVED	O.G. FIG.	
BY	CLASS	SUBCLASS
DRAFTSMAN		

FIG. 45

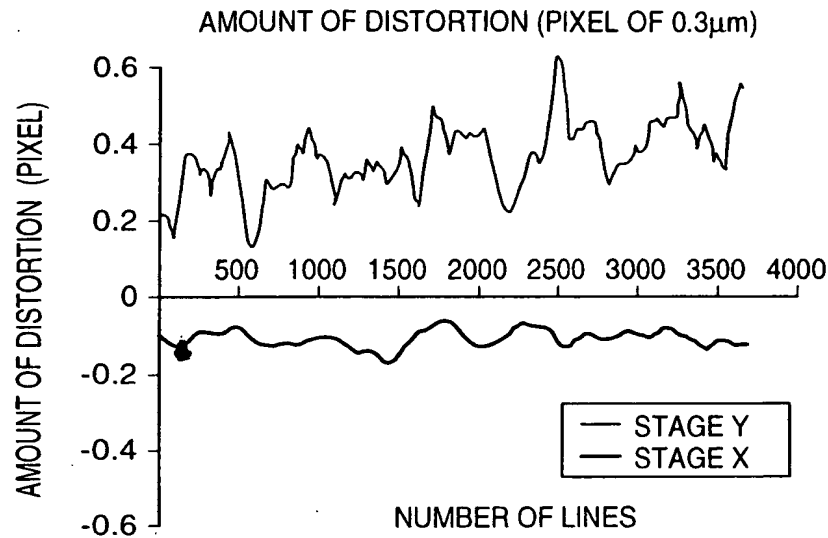


FIG. 46

SPECTRUM ANALYSIS : VARI
CASE NUMBER : 126
WEIGHT OF HAMMING : 0357, 2411, 4464, 2411, 0357

